Sustainability Roadmap 2018-2019:

Water Efficiency and Conservation

Progress Report and Plan Update on Meeting the Governor's Sustainability Goals for State Departments

Employment Development Department

Edmund G. Brown Jr., Governor

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Employment Development Department Sustainability Road Map 2018-2019: Water Efficiency and Conservation

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Acronyms

BMP	Best Management Practices
CALGREEN	California Green Building Code (Title 24, Part 11)
DGS	Department of General Services
DI	Disability Insurance
DWR	Department of Water Resources
EDD	Employment Development Department
EO	Executive Order
ESPM	Energy Star Portfolio Manager
GHGe	Greenhouse Gas Emissions
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
LCM	The Landscape Coefficient
LEED	Leadership in Energy and Environmental Design
LMSU	Lease Management and Sustainability Unit
MAWA	Maximum Applied Water Allowance
MM	Management Memo
MWELO	Model Water Efficient Landscape Ordinance
SAM	State Administrative Manual
SGA	Sustainable Groundwater Agency
SGMA	Sustainable Groundwater Management Act
UI	Unemployment Insurance
WIOA	Workforce Innovation and Opportunity Act
WMC	Water Management Coordinator
WS	Workforce Services
WSP	Water Shortage Plan
WUCOLS	Water Use Classifications of Landscape Species

Glossary

Backflow - is the undesirable reversal of the flow of water or mixtures of water and other undesirable substances from any source (such as used water, industrial fluids, gasses, or any substance other than the intended potable water) into the distribution pipes of the potable water system.

Back flow prevention device – a device that prevents contaminants from entering the potable water system in the event of back pressure or back siphonage.

Blowdown - is the periodic or continuous removal of water from a boiler to remove accumulated dissolved solids and/or sludge. Proper control of blowdown is critical to boiler operation. Insufficient blowdown may lead to deposits or carryover. Excessive blowdown wastes water, energy, and chemicals.

Compost – Compost is the product resulting from the controlled biological decomposition of organic material from a feedstock into a stable, humus-like product that has many environmental benefits. Composting is a natural process that is managed to optimize the conditions for decomposing microbes to thrive. This generally involves providing air and moisture, and achieving sufficient temperatures to ensure weed seeds, invasive pests, and pathogens are destroyed. A wide range of material (feedstock) may be composted, such as yard trimmings, wood chips, vegetable scraps, paper products, manures and biosolids. Compost may be applied to the top of the soil or incorporated into the soil (tilling).

Critical overdraft - a condition in which significantly more water has been taken out of a groundwater basin than has been put in, either by natural recharge or by recharging basins. Critical overdraft leads to various undesirable conditions such as ground subsidence and saltwater intrusion.

Ecosystem services - are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. Ecosystem services can be categorized in four main types:

- *Provisioning services are the products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines.*

- *Regulating services are the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control.*

- *Habitat services provide living places for all species and maintain the viability of gene-pools.*

- *Cultural services include non-material benefits such as spiritual enrichment, intellectual development, recreation and aesthetic values.*

Grasscycling -refers to an aerobic (requires air) method of handling grass clippings by leaving them on the lawn when mowing. Because grass consists largely of water (80% or more), contains little lignin and has high nitrogen content, grass clippings easily break down during an aerobic process. Grasscycling returns the decomposed clippings to the soil within one to two weeks acting primarily as a fertilizer supplement and, to a much smaller degree, mulch. Grasscycling can provide 15 to 20% or more of a lawn's yearly nitrogen requirements

Hydrozone – is a portion of a landscaped area having plants with similar water needs that are served by one irrigation valve or set of valves with the same schedule.

Landscape Coefficient Method (LCM) describes a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals.

Landscape water budget - is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Model Water Efficient Landscape Ordinance (MWELO) - The Water Conservation in Landscaping Act was signed into law on September 29, 1990. The premise was that landscape design, installation, and maintenance can and should be water efficient. Some of the provisions specified in the statute included plant selection and groupings of plants based on water needs and climatic, geological or topographical conditions, efficient irrigation systems, practices that foster long term water conservation and routine repair and maintenance of irrigation systems. DWR adopted the Model Ordinance in June of 1992. One element of the Model Ordinance was a landscape water budget. In the water budget approach, a Maximum Applied Water Allowance (MAWA) was established based on the landscape area and the climate where the landscape is located. The latest update to MWELO was in 2015. MWELO applies to all state agencies' landscaping.

Mulch – Mulch is a layer of material applied on top of soil. Examples of material that can be used as mulch include wood chips, grass clippings, leaves, straw, cardboard, newspaper, rocks, and even shredded tires. Benefits of applying mulch include reducing erosion and weeds and increasing water retention and soil vitality. Whenever possible, look for mulch that has been through a sanitization process to kill weed seeds and pests.

Trickle flow – A device that allows users to reduce flow to a trickle while using soap and shampoo. When the device is switched off, the flow is reinstated with the temperature and pressure resumes to previous settings.

Sprinkler system backflow prevention devices – are devices to prevent contaminants from entering water supplies. These devices connect to the sprinkler system and are an important safety feature. They are required by the California Plumbing Code.

Submeter- a metering device installed to measure water use in a specific area or for a specific purpose. Also known as dedicated meters, landscape submeters are effective for separating landscape water use from interior water use, evaluating the landscape water budget and for leak detection within the irrigation system.

Water Budget - A landscape water budget is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Water-energy nexus - Water and energy are often managed separately despite the important links between the two. 12 percent of California's energy use is related to water use with nearly 10 percent being used at the end water use. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems as well as wastewater collection and treatment.

Water Shortage Contingency Plans - each urban water purveyor serving more than 3,000 connections or 3,000 acre-feet of water annually must have an Urban Water Shortage Contingency Plan (Water Shortage Plan) which details how a community would react to a reduction in water supply of up to 50% for droughts lasting up to three years.

EXECUTIVE SUMMARY

The Employment Development Department (EDD) is a large state department with buildings spread throughout the State of California. While many of EDD's locations are leased from private ownership or owned by the Department of General Services (DGS), EDD also owns and operates 23 buildings.

For the purposes of this Water Roadmap, the discussion will focus on the 23 buildings owned by the Department. These buildings are spread throughout the state from as far north as Eureka to as far south as El Centro. EDD is responsible for the ongoing maintenance, repair, and improvement of these buildings, and is responsible for all applicable utility service to these locations. For these reasons, the EDD-owned offices require the most staff time, consume the majority of EDD's maintenance and repair budget, and are a top priority for water conservation projects.

Since the introduction of Governor Brown's Executive Order (EO) B-18-12, the EDD has made significant progress in meeting the requirements of the EO, including Leadership in Energy and Environmental Design (LEED): Existing Buildings Operation and Maintenance (EBOM) Gold certification and EnergyStar certification at the EDD-owned property in San Francisco, and exceeding the executive order requirements to reduce water, energy, and greenhouse gas (GHG) emissions. As of 2016, EDD has reduced overall water use by 46% when compared against the 2010 baseline. Many factors have contributed to this reduction in water usage, including replacement of plumbing fixtures and changes in everyday business practices.

EDD has conducted walkthroughs of the Sacramento office, which has the largest EDD-owned landscape, and will be working with the DGS to pursue a drought-tolerant renovation in the coming years.

Despite having exceeded the Governor's requirements for water conservation, the EDD recognizes that there is room for additional water conservation measures and further reductions in overall water use. The following pages will include a discussion of progress-to-date, challenges faced by the EDD, and goals for water reduction in the future.

Patrick W. Henning
Director

SUSTAINABILITY GOALS

The Governor has directed California State Agencies to demonstrate sustainable operations and to lead the way by implementing sustainability policies set by the state. Sustainability includes the following general initiatives:

- Greenhouse Gas Emissions Reductions
- Building Energy Efficiency and Conservation
- Indoor Environmental Quality (IEQ)
- Water Efficiency and Conservation
- Monitoring Based Building Commissioning (MBCx)
- Environmentally Preferable Purchasing (EPP)
- Financing for Sustainability
- Zero Emission Vehicle (ZEV) Fleet Purchases
- Electric Vehicle Charging Infrastructure
- Monitoring and Executive Oversight

The Governor has issued numerous executive orders directing sustainable state operations. The orders relevant to water are:

Executive Order B-18-12

EO B-18-12 and the companion *Green Building Action Plan require state agencies to reduce the environmental impacts of state operations by reducing greenhouse gas emissions, managing energy and water use, improving indoor air quality, generating onsite renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups; the staffs level Sustainability Working Group and the executive level Sustainability Task Force, to ensure these measures are met.*

Executive Order B-18-12 requires State agencies to reduce agency-wide water use 10% by 2015 and 20% by 2020 as measured against a 2010 baseline. The 2015 and 2020 targets reinforce the SB X7-7 requirement that State agencies reduce water use at facilities they operate to support local water suppliers in meeting their targets.

On February 28, 2013, the California Department of Water Resources issued its Water Use Reduction Guidelines and Criteria, pursuant to Executive Order B-18-12. Each applicable agency was required to take actions to reduce water use in facilities and landscapes that are operated by the state, including facilities owned, funded or leased. State operated facilities are defined as facilities where the agency has direct control of the buildings' function, maintenance and repair. For leased facilities, the Green Building Action Plan directed at that time that new and renegotiated leases include provisions for water conservation, reporting water use and installation of submeters to the extent possible and economically feasible.

All the following sections in this water plan and the accompanying worksheet only repeat the initial criteria and guidelines issued at that time. Only the MWELO requirements have been updated since that time. Additionally, other Executive Orders have followed, strengthening and elaborating on the issues contained in EO B-18-12.

EO B-18-12 requires that beginning January 2013, agencies shall regularly report current water use into the water tracking database. Since January 2014, annual water use reports have documented progress towards the 2015 and 2020 targets using the *EnergyStar Portfolio Manager (ESPM)* to track energy and water use and to submit annual reports to DGS. (Sustainability Manager, Department of General Services, 707 Third Street, 8th Floor, West Sacramento, CA 95798-9052). Additionally, for facilities with landscape areas over 20,000 sq. ft. the landscape water use must be tracked with a water budget program.

Executive Order B-29-15

EO B-29-15 directs state agencies to take actions in response to the ongoing drought and to the State of Emergency due to severe drought conditions proclaimed on January 17, 2014. The Governor directed numerous state agencies to develop new programs and regulations to mitigate the effects of the drought, and required increased enforcement of water waste state wide. Agencies were instructed to reduce potable urban water use by 25% between 2013 and February 28, 2016.

Executive Order B-30-15

EO B-30-15 declared climate change to be a threat to the well-being, public health, natural resources, economy, and environment of California. It established a new interim statewide greenhouse gas emission reduction target of 40 percent below 1990 levels by 2030, and reaffirms California's intent to reduce greenhouse gas emissions by 80 percent below 1990 levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions.

Executive Order B-37-16

EO B-37-16 builds on what were formerly temporary statewide emergency water restrictions in order to establish longer-term water conservation measures, including permanent monthly water use reporting, new permanent water use standards in California communities and bans on clearly wasteful practices such as hosing off sidewalks, driveways and other hardscapes. The EO focuses on using water more wisely, and eliminating water waste by taking actions to minimize water system leaks. The Department of Water Resources (DWR) estimates that leaks in water district distribution systems siphon away more than 700,000 acre-feet of water a year in California - enough to supply 1.4 million homes for a year.

The EO further strengthens local drought resilience and looks to improve agricultural water use efficiency and drought planning. State agencies are to cooperate with urban water management plans which include plans for droughts lasting for at least five years by assuring that the water efficiency and conservation plan has drought contingency actions.

State Administrative Manual & Management Memos

The following sections of the State Administrative Manual (SAM), and associated Management Memos (MM), currently impose sustainability requirements for water on the department under the Governor's executive authority:

SAM Sections

- Landscaping practices 1821.5
- Drought moratorium 1821.4

Relevant Management Memos

- *MM 15-06 State Buildings And Grounds Maintenance And Operation*
- *MM 15-04: Energy Use Reduction for New, Existing, and Leased Buildings*
- *MM 14-02 Water Efficiency and Conservation*
- *MM 14-07: Standard Operating Procedures For Energy Management In State Buildings*
- *MM 14-09: Energy Efficiency in Data Centers and Server Rooms*

Relevant Legislation

Sustainable Groundwater Management Act of 2014 - The Sustainable Groundwater Management Act (SGMA) directs the DWR to identify groundwater basins and subbasins in conditions of critical overdraft. Conditions of critical overdraft result from undesirable impacts, which can include seawater intrusion, land subsidence, groundwater depletion, and/or chronic lowering of groundwater levels. As defined in the SGMA, "A basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."

As required in the SGMA, basins designated as high or medium priority and critically overdrafted shall be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2020. All other high and medium priority basins shall be managed under a groundwater sustainability plan by January 31, 2022.

WATER EFFICIENCY AND CONSERVATION REPORT

This Water Efficiency and Conservation Report demonstrates to the Governor and the public the progress the Department has made toward meeting the Governor's goals. This report identifies successful accomplishments, ongoing efforts, and outstanding challenges.

Introduction

California experiences the most extreme variability in yearly precipitation in the nation. In 2015, California had record low statewide mountain snowpack of only 5 percent of average while 2012-14 were the 4 driest consecutive years of statewide precipitation in the historical record. Now, the 2017 water year (October 1, 2016-September 30, 2017) is surpassing the wettest year of record (1982-83) in the Sacramento River and San Joaquin River watersheds and close to becoming the wettest year in the Tulare Basin (set in 1968-69). These potential wide swings in precipitation from one year to the next show why California must be prepared for either flood or drought in any year.

Therefore, using water wisely is critical. The EOs and SAM sections listed in the previous section help demonstrate the connection between water and energy use (the water-energy nexus), water and climate change, and water and landscaping. Further, the impact of water use by state agencies goes beyond the scope of these EOs, SAM sections, and DGS Management Memos, as these documents do not address such related issues as water runoff from landscaping and various work processes and the potential for water pollution or the benefits of water infiltration, soil health and nutrient recycling. However, by using holistic water planning, a well-crafted water plan can not only meet all state requirements but add considerable value and benefits to the organization and surrounding communities.

The EDD understands that water conservation is crucial to preserving California's resources, including both water and the energy required to deliver water to the destination site. To date, the EDD has completed two major plumbing retrofit projects to replace inefficient fixtures, in addition to the replacement of end-of-life equipment, which has contributed toward the Department's overall water use reduction of 46% over the 2010 baseline. The Department implemented more stringent water conservation techniques during the drought, achieving a 57% reduction in water use between 2013 and 2016.

A core value in the Department's Strategic Plan is to pursue sustainable business operations. While the State's drought has ended, the EDD continues to look for opportunities to update building infrastructure and develop business practices to support conservation efforts, including ongoing monitoring of water and energy use, reviewing building management practices, and reaching out to various service providers to take advantage of available programs.

Department Mission and Built Infrastructure

The EDD is one of the largest state departments, which administers Workforce Services (WS), Unemployment Insurance (UI), Disability Insurance (DI), employment tax collection programs, and related administration, technology, policy, accountability, and compliance activities to citizens and employers throughout California. The EDD continuously strives to align system operations, practices, and resources with programmatic priorities and budgetary parameters.

The Department's WS program is subject to the federal Workforce Innovation and Opportunity Act (WIOA), which strengthens the ability of the WS program to align investments in workforce, education, and economic development with regional in-demand jobs. It also focuses on the importance of providing customers with access to high-quality employment centers that connect them with a full range of services available in their communities. Every local area, as outlined in WIOA, must have at least one comprehensive America's Job Center of California (AJCC), which provides customers access to all appropriate job services in a single location.

As of December 31, 2016, EDD's real estate portfolio consists of 23 EDD-owned properties, 16 DGS-owned properties, and 129 properties leased or subleased from private ownership, and occupies approximately 2.7 million square feet. Of EDD's 23 owned buildings, 19 were built before 1970, which presents unique challenges for maintenance and building improvements. EDD uses available overhead budget to maintain and modernize its buildings to achieve water reductions incrementally.

EDD's general-use office buildings operate during regular business hours, typically between 6 AM and 6 PM. EDD also maintains three warehouse locations that are used for reprographics, mail sorting and distribution, and supplies and equipment storage, which may be subject to extended operating hours during times of peak workload. These office and warehouse locations have typical water use for restrooms, drinking fountains, and faucets. Some offices also have water-based heating and cooling systems that use boilers and cooling towers. Half of EDD's buildings have landscaped areas, most of which are 1,000 feet or smaller.

Table 1: Total Purchased Water

Purchased Water	Quantity (Gallons)	Cost ($/yr)
Potable	8,168,600	$80,575
Recycled Water	0	$0
Total	8,168,600	$80,575

Table 2a: Properties with Greatest Water Use Per Capita

Building Name	Area (sq. ft.)	Total Gallons	Average Gallons per Capita
Santa Barbara #0754	18,023	935,600	88
Merced #0506	14,210	454,500	78
Modesto #0508	25,067	980,000	44
San Jose #0737	29,013	490,800	20
Riverside #0918	17,559	723,500	19
Total for Buildings in This Table	103,872	3,584,400	35
Total for All Department Buildings	550,680	8,168,600	14
% of Totals	19%	44%	---

Table 2b: Properties with Largest Landscape Area

Building Name	Area (sq. ft.)
Sacramento #0713	50,000
Fresno #0219	6,000
Merced #0506	2,000
El Centro #0204	1,000
Inglewood #0316	600
Riverside #0918	600
Total for Buildings in This Table	60,200
Total for All Department Buildings	63,360
% of Totals	95%

Many of EDD's buildings are located in urban areas with little or no landscaping. Those with landscaping generally have tree planters around the perimeter of the building and parking lots with limited turf area. During the drought, EDD drastically reduced landscape irrigation. Turf watering was eliminated and trees and shrubs were watered at the minimum level necessary to prevent die-off. Since the end of the drought, EDD has resumed landscape watering in accordance with local regulations. As a result, EDD anticipates that 2017 water use will increase, diminishing the Department's overall water use reduction. In order to maximize water efficiency, EDD will review landscaping and irrigation practices to encourage efficient landscape maintenance.

The facilities listed in Table 2b above are the only sites with sizable landscaped areas larger than 500 square feet. The most notable site is the Sacramento office located at 5009 Broadway, Sacramento, which accounts for approximately 80% of EDD's landscape area. The Sacramento office will be the highest priority for opportunities to improve irrigation practices as well as transition to climate appropriate landscaping. EDD has completed a water use audit through the City of Sacramento to determine how water use can be maximized at this office. The audit confirmed that the majority of the water use is for landscape maintenance. EDD has completed a walkthrough of the site with a DGS Landscape Architect to pursue a large-scale climate-appropriate renovation of the landscaping. Due to the small size of the other landscapes, the initial focus will be on improving operating practices and replacing broken equipment with more efficient fixtures, as needed.

Table 3: Department Wide Water Use Trends

Year	Total Occupancy	Total Amount Used (Gallons/year)	Per capita Gallons per person per day
Baseline Year 2010	1,608	15,045,705	26
Baseline Year 2013	1,608	19,044,044	32
Current Year 2016	1,608	8,168,600	14
2020 Goal – 25% reduction		11,284,279	19

As reflected in Tables 3 and 4, EDD reduced water use by 46% between 2010 and 2016. Conservation efforts included the elimination of outdoor watering, indoor plumbing equipment repairs and retrofits, eliminating fleet vehicle washing, educating staff on water conservation, and water waste and leak reporting. As some of the suspended practices are incorporated back

into regular business practices, EDD will continue monitoring overall water use and address issues as they arise.

Table 4: Total Water Use Reductions Achieved

Total Water Use Compared to Baseline Year	Reduction Achieved	Percent Reduction Achieved	Total Amount Used (Gallons per year)	Annual Gallons Per Capita
EO B-18-12 Goal: Reduce 2016 Water Use 20% vs. 2010 baseline	☒Yes ☐ No	46% over 2010	15,045,705	26
EO B-29-15 Goal: Reduce 2016 Water Use 25% vs. 2013 baseline	☒Yes ☐No	57% over 2013	19,044,044	32

EDD's total water use in 2016 achieved the 20% reduction over the 2010 baseline required by EO B-18-12, as well as the 25% reduction over the 2013 baseline required by EO B-29-15.

EDD's water savings can be partially attributed to two large-scale projects to repair and replace plumbing fixtures in EDD-owned facilities. Beginning in 2014, all facilities were assessed by plumbers to identify leaks and complete necessary repairs. In 2015, EDD was awarded a $25,000 DGS Water Grant, which was used to accomplish additional fixture retrofits and replacements. Currently, approximately 60% of toilets, 70% of urinals, and 95% of faucets are high efficiency fixtures. A limited number of buildings are not suitable for the most efficient fixtures due to plumbing and water flow requirements of extremely old plumbing systems. As these systems are replaced, fixtures will also be updated to the most efficient standards.

Table 5: Summary of Indoor Water Efficiency Projects Completed or In Progress

Year Started	Water Saved (Gallons/yr)
2015 Water Grant Fixture Retrofits	2,680,000 *estimated*

The 2015 Water Grant was used to replace fixtures or install more efficient urinals and bathroom and kitchen faucets statewide. Due to low return on investment, many of the low efficiency toilet fixtures were not addressed with the Water Grant. This investment resulted in approximately 2,680,000 gallons of water savings at these facilities. Water costs have not been monitored as part of the ESPM data tracking, so the cost savings are unavailable. However, these fixture retrofits have contributed to 25% of the EDD's overall water savings at no cost to the Department.

Boilers and Cooling Systems Projects

EDD is continuously working with the DGS Project Management and Development Branch to accomplish HVAC replacements at EDD-owned facilities as they reach the end of the system lifespan. These projects are time consuming and costly, and therefore are completed on a one-by-one basis. As part of these projects, the existing system is assessed in order to implement the most appropriate system for the facility and a high priority is given to installing systems that are both energy and water efficient.

In 2016, a Flow Tech non-chemical electronic water treatment system was installed in the San Francisco office, which is EDD's largest facility. This system eliminates the use of chemicals in cleaning the water servicing the HVAC system, resulting in more efficient use of water and energy. The water is also recyclable and eliminates the environmental impact of blowdown, air emissions, and drift from chemicals. While the water and energy savings from this specific project cannot be captured, the San Francisco office realized a water savings of 97,000 gallons and an energy savings of 380,000 kBTU in 2016 compared 2013.

The Inglewood office is completing an HVAC installation to replace two chillers, pumps, and a variable frequency drive to conserve energy. The system is a closed loop system, which recycles water within the system. This upgrade will improve overall system efficiency. Additionally, the DGS is currently performing a study of the HVAC system at the San Bernardino UI office.

Landscape Hardware and Living Landscape Water Efficiency Projects

Most EDD facilities are located in urban areas without any landscape area. The existing landscapes are primarily small tree planters, which were prioritized for watering during the State's landscape moratorium to preserve shading. Only 4 EDD facilities have turf areas of 1,000 square feet or larger, none of which were watered during the drought. In accordance with the landscape moratorium, the water use assessments performed in 2014 identified any existing irrigation issues, such as broken pipes, which were repaired at that time. However, the Department did not pursue any landscape projects during this period.

As discussed previously, EDD will prioritize the Sacramento office to renovate landscaping and improve practices in order to maximize savings. The dramatic water savings at the Sacramento office are largely attributable to eliminating landscape water use during the drought. Efficiency efforts at this facility would have a great impact on EDD's overall water use as landscape watering is resumed. EDD has completed a walkthrough of the site with a DGS Landscape Architect. EDD will work with DGS to develop a project scope and budget in the coming months, with specific consideration of water efficiency.

Water Shortage Contingency Plans and Critical Groundwater Basins

Urban water suppliers are required to maintain Water Shortage Contingency Plans that are customized to local conditions. These plans include a staged response to water shortages and droughts lasting up to three years. When implementing the stages of the Water Shortage Contingency Plan, the water supplier will require increasingly stringent reductions in water use.

State agencies are to be aware of their water suppliers' Water Shortage Contingency Plan and the potential impact each stage may have on their water use. State agencies are to have their own contingency plans in place for their building and landscaping water use in order to respond to any stage implemented by the water supplier.

The SGMA established a new structure for managing California's groundwater resources at a local level by local agencies. SGMA requires, by June 30, 2017, the formation of locally-controlled groundwater sustainability agencies (GSAs) in the State's high- and medium-priority groundwater basins and subbasins (basins). A GSA is responsible for developing and

implementing a groundwater sustainability plan to meet the sustainability goal of the basin to ensure that it is operated within its sustainable yield, without causing undesirable results. For those facilities located in critical groundwater basins, state agencies are to work with the local GSA plan.

Table 6a: Number of Buildings with Urban Water Shortage Contingency Plans

Number of Buildings with Urban Water Shortage Contingency Plans
23

Table 6b: Buildings in Critical Groundwater Basins

Buildings in Critical Groundwater Basins	Amount of Water Used by Buildings in Critical Groundwater Basins (Gallons)
Fresno #0219	84,400
Merced #0506	454,500
Total Amount of Water Used	**538,900**

In accordance with emergency drought and local suppliers' restrictions, EDD limited landscaping watering. Water management adjustments included:

- During the 2013-2016 drought, EDD adjusted practices in accordance with the local requirements to reduce water use. These efforts included eliminating turf irrigation, watering prioritized landscaping such as trees and shrubs, and an ongoing effort to retrofit indoor plumbing and equipment with more efficient models.
- Because EDD's facilities are limited to general office space, EDD's contribution to a water shortage contingency plan would be primarily limited to the reduction or elimination of landscape watering and outreach to staff and customers to practice water conservation in daily operations. The majority of the Department's indoor water fixtures have been retrofitted for maximum efficiency.
- In a scenario where a water district is not able to supply sufficient water due to repairs or other special circumstances, EDD's contingency plan includes providing portable toilets and bottled drinking water. Due to health and safety concerns, an extended water shutoff period requires that staff be released from the work site until the issue is resolved.

Building Inventories Summary

Table 7: Summary of Building Inventory Needs

Number of toilets using greater than 1.6 gallon per flush	Number of urinals using greater than 1.0 gallons per flush	Number of faucets using greater than 0.5 gallons per minute
101	20	44

Currently, approximately 60% of toilets, 70% of urinals, and 95% of faucets are water efficient. Some offices are not suitable for the most efficient fixtures due to plumbing and water flow needs. Retrofit and replacement of toilets is more costly and has a lower return on investment than faucets, aerators, and urinal fixtures, and will require separate projects with dedicated budget. However, high efficiency fixtures will be installed when replacement is warranted.

Heating and Cooling Systems Inventories Summary

The majority of EDD's buildings utilize package unit or rooftop HVAC systems and do not use boilers or chillers for heating and cooling needs, and therefore have minimal impact on water use. HVAC service contracts typically include monthly maintenance to keep systems operating efficiently as well as energy conservation measures such as standard temperature settings, seasonal system adjustments, and regular system testing and calibrations.

Irrigation Hardware Inventories Summary

Landscaping typically uses 50 percent or more of an agency's total water use. While landscaping serves critical functions, the accompanying irrigation hardware, if not properly installed and maintained, can contribute to water waste. By reviewing and inventorying all irrigation hardware, it is possible to achieve significant water savings.

The majority of EDD's landscape areas are small and are primarily managed by contracted landscape service vendors. These vendors are responsible for monitoring the irrigation hardware, as well as adjusting water schedules seasonally and effecting needed repairs promptly. EDD generally limits landscape work to maintenance of existing areas and does not perform major rehabilitation or installation of new landscape. Irrigation is not currently submetered and installation of submeters would have limited benefit for the small areas covered. Similarly, these areas would not likely be candidates for implementation of hydrozones.

However, EDD will use the findings of the water audit and the DGS Landscape Architect's walkthrough for the Sacramento office to determine opportunities to renovate the landscaping, upgrade equipment, and implement best practices to improve outdoor water efficiency at facilities statewide. The Department will also research the availability of water audits for other facilities at no cost to the state and work with water service providers to implement solutions as appropriate.

Living Landscape Inventory

Far from being just an aesthetic or ornamental feature, landscaping plays a critical role around public buildings and facilities. From providing safety and security, to reducing local heat islands, suppressing dust, reducing water runoff, maintaining soil health, aiding in water filtration and nutrient recycling, landscaping around public buildings is essential. Further, landscaping in public places frequently surrounds historic places and public memorials as well as provides pleasant public gathering spaces. The health and proper maintenance of these landscapes is vital to the physical wellbeing of California's people as well as to its social, cultural, political and historical life.

Additionally, the many vital ecosystem functions carried out by living public landscaping are critical in helping California meet its goals for greenhouse gas reduction, climate change adaptation, water and energy efficiency, and water conservation.

Urban forests are vital to improving site conditions for occupants and visitors to buildings and the surrounding community.

Table 8: Summary of Living Landscape Inventory

Facilities with Landscape >500 sq. ft.	Landscape Area (sq. ft.)
Sacramento #0713	50,000
Fresno #0219	6,000
Merced #0506	2,000
El Centro #0204	1,000

Most of EDD's facilities are located within well-established cities without much opportunity to expand living landscape beyond the existing tree planter boxes lining parking lot and facility perimeters. The facilities identified above are the only facilities with landscape area greater than 1,000 sq. ft. These sites primarily have turf and trees and are not large enough to require major infrastructure such as booster pumps.

Large Landscape Water Use

Large landscape water use often represents a significant percentage of a facility's water use and significant water savings can be achieved through better irrigation scheduling or inexpensive improvements in irrigation hardware. As part of the Water Use Guidelines and Criteria, the water use for landscape areas over 20,000 sq. ft. shall be tracked through a water budget program.

Table 9. Summary of Large Landscape Inventory and Water Budget

Sites with > 20,000 sq. ft. of Landscaping	Total Landscape Area per Facility	Total Water Budget per facility	Total EPA WaterSense or Irrigation Association Certified Staff
Sacramento #0713	50,000	1,126,300	0

EDD facilities are not currently using submeters or water budgets for landscape irrigation. EDD will contact water providers to explore opportunities available to improve landscaping practices department-wide, with a focus on the Sacramento office. According to the DWR's water budget calculator, this facility's water budget is 1,126,300 gallons per year. However, without an irrigation submeter, the actual landscape water use data is not available. The Sacramento office accounts for approximately 80% of EDD's landscaping and will therefore be the Department's priority for installing climate-appropriate landscaping. EDD will also consult the City of Sacramento to determine the feasibility of installing a submeter for landscape irrigation, which would allow better tracking and monitoring of water used on landscape at this facility.

BMPs

Building Best Management Practices (BMPs) are ongoing actions that establish and maintain building water use efficiency. State agencies are required by DGS Management Memo 14-02 to implement the building BMPs outlined below.

Building Water Management BMPs

General Water Management

The EDD's Lease Management and Sustainability Unit (LMSU) tracks monthly water usage by uploading data manually or through automated data exchange with the providers into ESMP. This is a valuable tool for monitoring usage for unexpected spikes. When a spike in water use is detected, the LMSU issues a "Red Flag Alert" to the appropriate facilities manager, who is responsible for investigating the cause and reporting back on any remediation action. By implementing this system, EDD has been able to detect and resolve a number of building deficiencies that may have otherwise gone undetected for months or years.

For example, the Santa Barbara office experienced a dramatic increase in water usage between January and February 2017. A technician was brought in to investigate the issue, and found that the HVAC water tower float assembly was malfunctioning, failing to shut off and drain the system. The cooling tower was shut down and drained of water, and the broken parts were replaced to return the system to normal operation. During this service, the technician also discovered an unrelated leak and was able to replace the broken copper pipe.

Leak Detection and Repair

Plumbing at EDD-owned facilities is primarily maintained by EDD or DGS maintenance staff and supplemented with service contracts as needed. Duties include leak locating, which may be prompted by local staff reports or a "Red Flag Alert," as described above. Landscape service contracts include in the terms of the agreement checking fixtures and watering systems for efficient water use on a regular basis, as well as effecting any needed repairs promptly.

Building Heating and Cooling Systems BMPs

EDD's heating and cooling systems are maintained through a combination of private vendor contracts and DGS maintenance engineers. These contracts detail service requirements including monthly maintenance, system programming and adjustments, and major servicing such as quarterly boiler system water recharge, as appropriate for the facility.

Landscaping Hardware Maintenance BMPs

In accordance with landscape contract terms, irrigation hardware is checked on a regular basis for efficient operation and coverage.

Living Landscape BMPs

Landscape contract terms include maintaining the health of all plant life. During periods of drought, EDD prioritizes shade trees over other plants or turf area. Irrigation systems are checked regularly to confirm efficient operation and coverage of landscaped areas and adjustments are made seasonally.

Monitoring, Reporting and Compliance

Each state agency is responsible for monitoring water use and reporting baseline and annual water use for compliance with the water use reduction targets. Water use shall be measured at facilities that have meters and submeters.

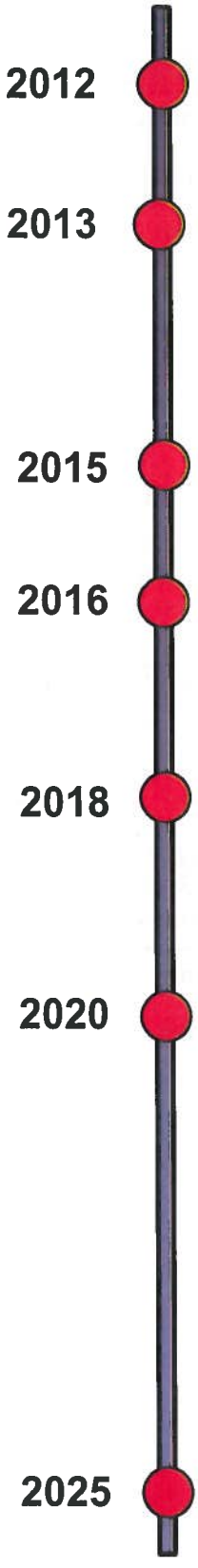
Water use must be estimated at state facilities that do not have water meters.

EDD makes a concerted effort to track and report water usage in the ESPM database. In addition to providing data for owned properties, EDD collects data for leased properties when EDD is responsible for utility payments and also requests usage data from all other lessors annually. Monitoring of EDD's water use allows the Department to continue to optimize business processes for service delivery and compliance with state requirements, as well as help to identify opportunities to further reduce water use.

With the end of the 2013-2016 drought, EDD anticipates that resumption of landscape irrigation and other practices may impact the Department's water conservation efforts. EDD will continue to monitor for major changes in water usage and investigate opportunities to increase water efficiency.

As discussed in this Roadmap, EDD intends to work with water service providers to obtain water audits when available at no cost to the State, as well as explore opportunities to improve building management and landscape practices for water efficiency. While the Department has achieved excellent water savings to date, the EDD recognizes the importance of continually evaluating practices for opportunities for improvement.

SUSTAINABILITY MILESTONES & TIMELINE



2012
- EXECUTIVE ORDER B-18-12 & B-16-12 ISSUED
- NEW & RENOVATED BUILDINGS EXCEED T-24 BY 15%

2013
- BUILDINGS <10,000 SQ. FT. MEET CALGREEN TIER 1
- BEGIN WATER USE BENCHMARKING

2015
- LEED-EB CERTIF. FOR ALL EXIST. BLDGS >50,000 SQ. FT.
- REDUCE WATER USE 10%
- 10% OF FLEET LDV PURCHASES ZEV

2016
- REDUCE WATER USE 25% FROM 2013 TO FEB 28, 2016

2018
- 20% ENERGY USE REDUCTION

2020
- 50% OF NEW & RENOVATED BUILDINGS ZNE
- REDUCE WATER USE 20%
- 25% OF FLEET LDV PURCHASES ZEV

2025
- 100% OF NEW & RENOVATED BUILDINGS ZNE
- 50% OF EXISTING BUILDINGS ZNE

DEPARTMENT STAKEHOLDERS

Indoor Water Efficiency Projects In Progress First initiative	
Office of Facilities Planning and Management	Lease Management and Sustainability Unit
Office of Facilities Planning and Management	Northern Facilities Planning Section
Office of Facilities Planning and Management	Southern Facilities Planning Section

Boilers and Cooling Systems Projects In Progress	
Office of Facilities Planning and Management	Lease Management and Sustainability Unit

Landscaping Hardware Water Efficiency Projects In Progress	
Office of Facilities Planning and Management	Lease Management and Sustainability Unit

Living Landscaping Water Efficiency Projects In Progress	
Office of Facilities Planning and Management	Lease Management and Sustainability Unit

Buildings with Urban Water Shortage Contingency Plans In Progress	
Office of Facilities Planning and Management	Lease Management and Sustainability Unit
Office of Facilities Planning and Management	Northern Facilities Planning Section
Office of Facilities Planning and Management	Southern Facilities Planning Section